

Claims:

1. A process for preparing a 5-(acyloxy)-N,N-dialkyl-2-cyclopentene-1-acetamide of Formula III comprising:

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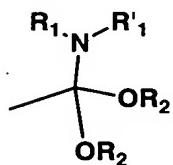
Reacting a 3-acyloxy-5-hydroxycyclopentene of Formula I



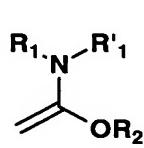
Formula I

with an amide acetal of Formula IIa or a ketene aminoacetal of Formula IIb

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Formula IIa



Formula IIb

wherein;

R₁ and R'₁ are C₁ to C₄ alkyl or

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R₁ and R'₁ taken together form a ring of 3 to 7 members;

R₂ is C₁ to C₄ alkyl;

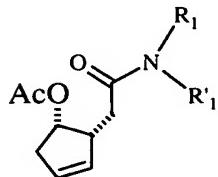
Ac is C₁ to C₄ alkanoyl;

at 90-140°C in a suitable solvent of boiling point >90°C while maintaining an alcohol

R₂OH concentration of less than 3% by volume to give an

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acylhydroxycyclopenteneacetamide of Formula III;



Formula III

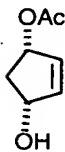
2. A process according to Claim 1 for preparing (4R, 5S)-3,3a,6,6a-tetrahydro-2H-cyclopentan[b]furan-2-one further comprising the steps of:

- Adding an alkali or alkali earth hydroxide, carbonate, bicarbonate, or quaternary ammonium hydroxide solution to give a homogeneous or biphasic mixture;
- 5 and
- Adding a strong acid of $pK_a < 2$ to give the title lactone of Formula IV.



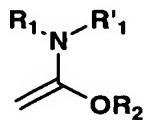
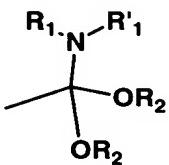
Formula IV

3. A product prepared by a process comprising:
- 10 Reacting a 3-acyloxy-5-hydroxycyclopentene of Formula I



Formula I

with an amide acetal of Formula IIa or a ketene aminoacetal of Formula IIb



- 15 **Formula IIa**

Formula IIb

wherein;

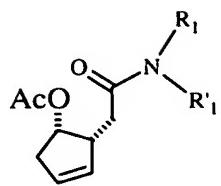
R_1 and R'_1 are C_1 to C_4 alkyl or

R_1 and R'_1 taken together form a ring of 3 to 7 members;

R_2 is C_1 to C_4 alkyl;

- 20 Ac is C_1 to C_4 alkanoyl;

at $90\text{--}140^\circ C$ in a suitable solvent of boiling point $>90^\circ C$ while maintaining an alcohol R_1OH concentration of less than 3% by volume to give an acylhydroxycyclopenteneacetamide of Formula III;

**Formula III**

4. A product prepared by a process according to Claim 3 further comprising the steps of:

- 5 Adding an alkali or alkali earth hydroxide, carbonate, bicarbonate, or quaternary ammonium hydroxide solution to give a homogeneous or biphasic mixture; and

Adding a strong acid of pK_a < 2 to give a lactone of Formula IV.



10 **Formula IV**